EPA
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Agency

The WIPP Bulletin

A Message From the Director

This bulletin is our first in nearly a year, and what a busy year it's been for EPA's WIPP program! First, I would like to introduce myself, Betsy Forinash, as the new Director of the Center for Federal Regulations, which is responsible for the EPA's oversight of WIPP. Some of you may recognize my name from when I worked on WIPP during the development of EPA's Compliance Criteria and the initial Certification Decision. I am returning to work on WIPP after spending a few years working on some of EPA's other radioactive waste management projects. I am excited to work on such a dynamic and interesting project and I look forward to keeping you informed about the important issues of recertification and continued compliance with EPA's regulations.

I'm pleased to report that last spring we received a final report from Phoenix Environmental and EnviroIssues, who completed an independent assessment of our extensive outreach efforts leading up to the final WIPP Certification Decision. Their work was based in large part on interviews with WIPP stakeholders. I would like to thank those of you who gave interviews or otherwise participated in this effort. Your contributions are very much appreciated.

We are looking closely at the report's recommendations as we consider our future outreach activities. In fact, this Bulletin reflects feedback that we received in the outreach evaluation. We learned that the WIPP Bulletin is a well-regarded source of information. We have added some new features that we hope will make the Bulletin even more informative: ***News Notes,*** which provides short updates on EPA's and DOE's recent activities; and a ***Focus On*** section, which will explain a different technical aspect of the project in each issue. We welcome your comments on the bulletin; please send them to our Webmaster at webmaster.oria@epa.gov or leave us a message on the information line at 1-800-331-WIPP and we will call you back.

This issue's ***Focus On*** section addresses EPA's actions to suspend waste shipments from the Idaho National Engineering and Environmental Laboratory (INEEL) in June 2001. In this section you will find a summary of events at INEEL and a description of EPA's actions.

As those of you who watch the WIPP project know, DOE has been actively investigating changes to the WIPP program. EPA is tracking these potential changes and many other issues. In ***News Notes*** we tell you about meetings, changes we have approved, and many other items. Our ***Technical Corner*** series continues with more explanation of the purpose and design of the WIPP performance assessment.

Inside this Issue

WIPP *News Notes*

Stakeholder Meetings

In February 2001, members of EPA's WIPP staff traveled to Albuquerque and Santa Fe to meet with representatives of WIPP stakeholder organizations to share the preliminary results of an independent evaluation of the WIPP Public Outreach Program (see ***Message from the Director***) and to begin discussing plans regarding EPA's recertification decision for the WIPP. The recertification decision is expected to be issued in 2004.

EPA met with representatives from the Southwest Research and Information Center, the Environmental Evaluation Group, Concerned Citizens for Nuclear Safety, Peace Action New Mexico, Nuclear Watch of New Mexico, and the New Mexico Attorney General.

In addition to reviewing the public outreach program evaluation, topics of interest to these stakeholder groups were discussed including: making sure the public receives balanced information about technical issues before EPA reaches its recertification decision; meeting more often with EPA staff during the recertification process; and the acceptability of certain program changes being considered by DOE.

Panel One Utilization

EPA recently approved a change to DOE's plans for waste emplacement in Panel One. A "panel" is a section of the WIPP that contains seven disposal rooms. The design for the WIPP calls for eight panels, of which only two have been excavated. DOE is quickly filling Panel One with waste; however, the rooms of Panel One were mined out many years ago and are already undergoing the natural processes that will eventually close the rooms. Several of the rooms in Panel One are experiencing significant lowering of the roof and raising of the floors due to salt creep. In an effort to reduce the risk of injury to mine workers from a roof collapsing, DOE requested EPA's approval to bypass rooms 4, 5, and 6 of Panel One and leave them permanently empty. DOE's request also means that no remote-handled TRU waste will be placed in Panel One. In July 2001, EPA approved DOE's request on the basis that it would have no significant effect on compliance with our regulations. A record of EPA's decision on the issue can be found in EPA Docket A-98-49, Item II-B3-19.

For More Information About the WIPP

More information on EPA's continued activities concerning the WIPP can be obtained from any of EPA's four public dockets (Washington DC, and Albuquerque, Carlsbad, and Santa Fe, New Mexico). The Docket number for EPA's post-certification activities at the WIPP is A-98-49. The pre-certification and certification decision Docket is A-93-02. For the latest information on EPA activities regarding the WIPP, please call EPA's recorded WIPP Information Line at 1-800-331-WIPP.

You can also read all about EPA's WIPP Program on the Internet. EPA's WIPP homepage is an excellent source for current information on EPA's WIPP activities. From the Homepage you can also download EPA documents and docket information. EPA's WIPP Homepage address is: www.epa.gov/radiation/wipp/

Experiments at WIPP

In August 2001, EPA approved the emplacement of the OMNISita astrophysics experiment in the WIPP facility for the study of celestial bodies and matter. These astrophysics experiments are not related to WIPP waste disposal activities. An underground mine such as the WIPP is a good place for this type of experiment because the shielding provided by hundreds of feet of soil and rock helps prevent interference of sensitive measurements by cosmic radiation.

EPA reviewed the technical information related to this experiment and determined that, as long as the equipment is removed after the experiment is completed, there should be no effect on the long-term containment performance of the repository. For more information on this experiment check the EPA Docket A-98-49, Item II-B3-20.

NAS Report

The National Academy of Sciences (NAS) recently released a report entitled, "Improving Operations and Long-Term Safety of the Waste Isolation Pilot Plant." This report identifies research activities recommended by NAS to enhance the understanding of the WIPP's long-term performance, as well as changes to waste management practices to promote efficiency, cost- effectiveness, and worker and public safety. To learn more about this report, see the National Academy Press website at: www.nap.edu.

Central Characterization Program

The Central Characterization Program (CCP) is being developed by DOE to facilitate characterization of waste by small quantity generator sites. DOE intends for the CCP to be a self- contained, transferrable waste characterization program that can be moved from site to site, thereby eliminating

the need to develop independent characterization programs at small sites. The CCP is at an early stage, and is being tested at the Savannah River Site (SRS) in South Carolina. EPA performed an inspection of the CCP's effectiveness at SRS in October 15, 2001. Subsequently, EPA approved the CCP's characterization of debris waste for shipment from SRS to the WIPP for disposal (A-98-49, Item II-A4-19). EPA will have to separately approve the use of the CCP for other waste streams and at other DOE sites.

Remote-Handled Waste

EPA observed a "surveillance" of the Battelle Columbus Remote-Handled Waste Characterization Program that was conducted by the DOE Carlsbad Field Office (CBFO) on August 27-29, 2001. The Battelle Columbus Laboratories (BCL) have generated radioactive waste from atomic energy research and development activities since 1943. As part of the decommissioning of BCL, DOE is processing the debris waste from the Hot Cell Laboratory in the JN-1 Building and characterizing its radiological contents. The waste from the Hot Cell Laboratory belongs to the category of TRU waste that poses radiological hazards to workers and must be handled in a remote fashion. DOE's August surveillance focused on BCL's ability to demonstrate compliance with CBFO's waste acceptance criteria and quality assurance requirements for remote-handled waste (RH-TRU). DOE is using this type of surveillance to develop a RH-TRU waste characterization proposal for EPA's review.

Also, DOE recently submitted draft plans for RH-TRU waste characterization to two separate peer review panels: one sponsored by the National Academy of Sciences and one sponsored by the Regulatory Science Institute (RSI). In July and August 2001, EPA staff presented to each panel on EPA regulations that apply to RH-TRU waste. The RSI panel has issued its report, which may be obtained by contacting CBFO at 1-800-336-WIPP. The National Academy of Sciences issued an interim report in December 2001. A final report is expected in Summer 2002.

Inspections at WIPP

In June 2001, EPA performed three inspections to verify that DOE is continuing to operate the WIPP safely: 1) Subpart A inspection, 2) disposal system monitoring inspection, and 3) emplacement inspection. The Subpart A inspection looks at DOE's activities to monitor any radioactive releases during the time when waste is being stored. (Subpart A of 40 CFR Part 191 governs radionuclide releases to the environment as a result of waste management and storage prior to disposal.) The disposal system monitoring inspection looks at the various programs DOE has established to monitor key conditions in and around the repository. Finally, the emplacement inspection looks at the procedures and methods used to place waste containers in the underground repository.

Through these inspections, EPA has determined that the Subpart A, disposal system monitoring, and emplacement programs are functioning appropriately. The reports for these and other inspections may be found in our docket (Docket A-98-49, Item II-B3-18).

Waste Shipments

The number of shipments from transuranic waste sites to the WIPP as of mid-January is listed below. Each shipment could contain as many as 42 drums of radioactive waste.

Savannah River	7
Rocky Flats	306
Los Alamos	25
Idaho	187
Hanford	10

WIPP Dockets Locations

US EPA Air Docket
Waterside Mall Room
M1500
401 M St. SW
Washington, DC 20460
(202) 260-7548
(all dockets)

Carlsbad Public Library
101 S. Halagueno
Carlsbad, NM 88220
(505) 885-6776
(all dockets)

Zimmerman Library
Government Publications
University of New Mexico
Albuquerque, NM 87131
(505) 277-5441
(all dockets)

Fogelson Library
College of Santa Fe
1600 St. MIchaels Drive
Santa Fe, NM 87505
(505) 473-6576
(Docket A-93-02 only)

New Mexico State LIbrary
1209 Camino Carlos Rey
Santa Fe, NM 87505
(505) 476-9717
(Docket A-98-49 only)

Introducing a New *Radiation Resource Kit for Teachers*

How big a risk does radiation pose to our families, our environment and to future generations? What should individuals and society do to ensure that the benefits of radiation are not outweighed by the risks? These questions and others are answered in a new "Understanding Radiation: A Resource Kit for Teachers" that is now available free to high school teachers to help educate students about radiation and risk.

Ordering Information:

To order your **free *Understanding Radiation Kit*** mail or fax the following information: Name, School, Address, Phone, Email and Grade taught to:

Understanding Radiation Kit
National Safety Council/Environmental Health Center
1025 Connecticut Avenue, NW #1200
Washington, DC 20036

Fax: (202) 293-0032

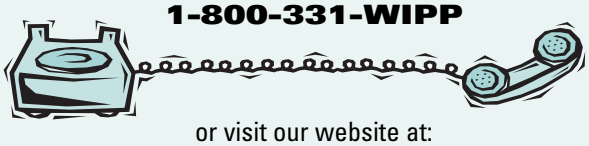
You may also e-mail your request to: cohend@nsc.org.

The *Understanding Radiation Resource Kit* contains:

- Two 10-minute videos:
  ➤ *"A Look at Radiation"* – an overview of radiation as part of our everyday lives and
  ➤ *"Managing Radiation"* – a look at how federal, state, and local agencies manage radiation
- Guidebook, *"Understanding Radiation in our World"* – a 60-plus page book with in-depth discussion of radiation related issues.
- A Companion Guide for high school science teachers with suggested classroom activities and a lesson plan on radiation related risk (aligned with learning goals in national science education standards).
- Overheads and Handouts – a set of overheads (16) and handouts (14) for use in conjunction with the risk analysis lesson plan.
- Poster, *"Nuclear Science Wall Chart"* – a poster (11" x 14") – summarizing nuclear science issues (produced by the Contemporary Physics Education Project and the Lawrence Berkeley National Laboratory)

This kit was developed through a cooperative agreement between the National Safety Council's Environmental Health Center and the U.S. Environmental Protection Agency.

For Further Information on EPA's WIPP Activities
Please Call the WIPP Information Line
1-800-331-WIPP



or visit our website at:
http://www.epa.gov/radiation/WIPP

Focus on: Inspections at Idaho Site

This summer EPA suspended shipments to the WIPP from DOE's Idaho National Engineering and Environmental Laboratory (INEEL) in response to a failure by DOE to comply with the waste characterization requirements of EPA's WIPP Certification Decision. This article answers some basic questions about the suspension. EPA's written actions on this issue can be found in Docket A-98-49, Item II-A4-17.

Why did EPA suspend shipments from INEEL?

We learned in late June 2001 that DOE had shipped and emplaced waste in the WIPP from INEEL that had been characterized using radioassay equipment that EPA had not previously approved. It was necessary to suspend shipments temporarily to prevent additional noncompliant waste from being disposed of in the WIPP while we investigated the situation.

Under Condition 3 of our WIPP Certification Decision, processes and equipment used for waste characterization must be inspected and approved by EPA before transuranic waste may be shipped from a DOE site. INEEL was using radioassay equipment called the Waste Assay Gamma Spectrometer (WAGS) to provide information about (characterize) the radioactive isotopes in the waste containers. As of June 2001, EPA had not evaluated the WAGS radioassay equipment for effectiveness.

During the first six months of 2001, INEEL shipped 850 unauthorized drums characterized using this radioassay equipment. Of these, 725 drums were actually placed in the WIPP, while the rest were stored above-ground awaiting disposal.

What actions did EPA take?

Our first action was to suspend all TRU waste shipments to the WIPP from INEEL until we could determine exactly what led to the shipment of unauthorized drums. We instructed DOE's Carlsbad Field Office (CBFO) to suspend shipments on June 27.

Next, we sent an inspection team to INEEL on July 2-3 to investigate the causes of the noncompliance and to verify which waste containers were affected. At this inspection, we also confirmed that DOE had complied with our suspension of shipments. At the conclusion of the inspection, we allowed INEEL to resume shipment of waste characterized by approved processes and equipment (drums not characterized using the WAGs system).

Last, we held a second inspection at INEEL on July 25-26 specifically to evaluate the WAGS radioassay equipment. As a result of this inspection, we found the WAGS equipment to be effective and authorized DOE to resume shipping and disposing of TRU waste characterized by the WAGS radioassay equipment. We issued this approval on August 15. With this approval, EPA also determined that waste containers already placed by DOE in the disposal system may remain there and waste containers held on the surface may be placed in the disposal system.

How did shipping of unauthorized drums occur?

During our first inspection in early July, we reviewed DOE's analysis of the causes of the noncompliance. According to this analysis, INEEL internally approved the WAGS radioassay equipment for WIPP use but failed to request CBFO's and EPA's approval of key procedural changes to the equipment prior to actually shipping waste that had been analyzed using the WAGS equipment. (Under current regulations, INEEL may use any available system to characterize waste without prior approval, but may not ship it to WIPP until EPA approval is given.)

Such a request would have initiated independent reviews by both CBFO and EPA. The error appeared to be the result of a breakdown mainly in the area of document control, as well as an incorrect assumption by INEEL personnel that the similarity of the WAGS radioassay equipment to previously-approved equipment meant that independent review by CBFO and EPA was not necessary.

What actions are being taken to prevent recurrence?

DOE is taking steps to analyze fully the causes of the noncompliance and prevent recurrence. INEEL is making improvements to document control procedures to minimize confusion over approved processes and equipment, among other actions. Also, CBFO has already inspected document control procedures at other approved waste sites (such as Rocky Flats) to verify that similar problems have not occurred. EPA will review the status of CBFO's and INEEL's responses at future inspections. The WIPP is a complex project, and it is important to understand compliance failures such as the recent one at INEEL to prevent them from recurring. Inspections are a powerful tool for EPA to verify the compliance of DOE's WIPP activities.

The Design of the WIPP Performance Assessment

The disposal regulations at 40 CFR Part 191 include requirements for containment of radionuclides. The containment requirements specify that releases of radionuclides to the accessible environment must be unlikely to exceed specific limits for 10,000 years after disposal. At the WIPP, the specific release limits are based on the amount of waste in the repository at the time of disposal. Assessment of the likelihood that the WIPP will meet these release limits is conducted through the use of a process known as performance assessment (PA).

In past issues of the WIPP Bulletin, we have provided information on the development of the performance assessment. In this issue we examine the features, events and processes (FEPs) that are the foundation of the PA.

The WIPP PA process culminates in a series of computer simulations that attempts to describe the physical attributes of the disposal system (site characteristics, waste forms and quantities, engineered features) in a manner that captures the behaviors and interactions among its various components. The computer simulations require the use of conceptual models that represent the physical attributes of the repository that include the results of a screening process applied to the FEPs. The conceptual models are then expressed as mathematical relationships, which are solved with iterative numerical models, which are then translated into computer code. The results of the simulations are intended to show the potential releases of radioactive materials from the disposal system to the accessible environment over the 10,000-year regulatory time frame.

In preparing the certification application for EPA, DOE compiled a list of 1,200 features, events or processes from various international surveys. DOE then conducted an initial screening process that eliminated FEPs that could not happen because of WIPP's location (for example, tidal waves). After this initial screening process, there were 236 FEPs left for more detailed consideration. These final FEPs were grouped into three major categories: natural, waste- and repository-induced, and human-initiated.

DOE further refined the list of FEPs using an elimination process. There were three criteria to eliminate FEPs:

1) Regulatory – Some FEPs can be omitted based on specific regulatory requirements. For example, drilling activities that occur outside the Delaware Basin do not have to be considered in the performance assessment, according to EPA's compliance criteria.
2) Probability – Some FEPs can be omitted because of the low probability that the FEP will occur. For example, DOE determined that the probability of a meteorite landing in the vicinity of the WIPP is so

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Types of Features, Events, and Processes (FEPs)

Natural: site stratigraphy, Castile brine reservoirs, salt deformation, formation of fractures, volcanic activity, groundwater chemistry, and sea level changes

Waste- and repository-induced: disposal system geometry, waste characteristics and inventory, seal design and characteristics, backfill characteristics, and radioactive characteristics of waste

Human-initiated: oil, gas, water resource, and potash activities; land use, farming, and urbanization

Contacts and On-Line Resources
WIPP Transportation Information*

WIPP Facility **TRU Waste** **Transportation**	Dennis Hurtt U.S. Department of Energy Office of Public Affairs National Transportation Program	(505) 234-7327	www.wipp.carlsbad.nm.us www.ntp.doe.gov
Transportation **Issues**	William B. (Bill) Mackie Coordinator of New Mexico's Radioactive Waste Task Force, State of New Mexico	(505) 476-3248	www.emnrd.state.nm.us/wipp
	Richard Swedberg Health Physicist U.S. Department of Transportation	(303) 969-6744, ext. 0363	www.fhwa.dot.gov/omc/omchome.html
	Ron Ross Program Manager Western Governors' Association	(303) 623-9378	www.westgov.org/wipp
	Debbie Cohen National Safety Council	(202) 293-2270, ext. 478	www.nsc.org/ehc/wipp.htm

*EPA does not regulate waste transportation to WIPP, however, we receive many requests for this information.

Technical Corner

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low that it does not need to be considered in the PA.

3) Consequences – Some FEPs can be omitted because the consequences resulting from the FEP, even if it does occur, are so small. For example, there would be no consequences to the repository or the containment of waste if an archeological excavation took place on the surface in the vicinity of the WIPP.

Upon completion of this process, DOE selected 83 FEPs to be included in the final performance assessment process. These FEPs were then used to develop scenarios and models.

The DOE had to justify the omission of any features, events and processes that could occur but are not included in the final PA calculations. The omission of some FEPs was one of the topics on which EPA received the most public comment during the certification process. Some people disagreed with DOE and EPA's elimination of certain FEPs. Examples of FEPs that commenters said should be included in the performance assessment are: karst topography, fluid injection and air drilling.

Of all the FEPs that are considered for the PA calculations, the human-intrusion scenarios related to drilling have been shown to have the most significant impact on the disposal system and its ability to contain waste. In the next issue of the WIPP Bulletin, we will discuss some of the human-intrusion scenarios in more detail and describe how we considered public comment on these scenarios.

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